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CULTURE OF POTATOES:

EXTRACTED FROM

COMMUNICATIONS

MADE TO THE

BOARD OF AGRICULTURE

IN GREAT-BRITAIN.

Published by Order of the Trustees of the Massachusetts Society for promoting Agriculture.

Whoever can make two ears of corn, or two blades of grass to grow upon a spot of ground where only one grew before, deserves better of mankind, and does more essential service to his country, than the whole race of politicians put together.

SWIFT.

BOSTON :

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PRINTERS TO THE STATE AND TO THE AGRICULTURAL SOCIETY.
MDCCXCVIII.

The Trustees of the MASSACHUSETTS
SOCIETY for promoting Agriculture,

IMPRESSED with the importance of increasing the quantity of vegetable food for the comfort and happiness of mankind, as well as for the support of domestick animals, and considering Potatoes as the most useful in northern countries, except the different species of corn, have caused the following extracts to be published, which contain the latest experiments and observations on that valuable root, communicated to the Board of Agriculture in Great Britain.

The Trustees earnestly request the Members of the Society, as well as all other persons who consider the agriculture of our country as the first and most important subject of attention, to transmit to them all their observations and experiments which appear to be different from the usual culture of the same article. They repeat what they have before declared, that every communication shall be considered with the greatest candour, and be published, if they conceive it will in any degree promote the great object for which the Society was instituted.

ON THE

CULTURE OF POTATOES.

*From the Communications of Dr. WRIGHT, of Edinburgh,
to the Board of Agriculture of Great-Britain.*

HISTORY. THE Potatoe is a native of Mexico and Peru. GOMARA, in his History of the Indies, and JOSEPHUS ACOSTA, are amongst the early Spanish writers who have mentioned the Potatoe by the Indian names *Openanck*, *Papæ* and *Papas*. CLUSIUS, and after him GERARD, gave figures of the Potatoe plant. GERARD was the first author who gave it the name *Solanum Tuberosum*, which LINNÆUS and his followers adopted.

In 1584, Sir WALTER RALEIGH, so celebrated for his worth, his valour, and his misfortunes, discovered that part of America called *Norembega*, and by him named *Virginia*. Whether the admiral was acquainted with the Potatoe in his first voyage, or whether it was sent to him by Sir THOMAS GRENVILLE, or Mr. LANE, the first governor of *Virginia*, is uncertain. It is probable he was possessed of this root about the year 1586.

USE.]—On account of the Potatoe being a species of *Solanum* or night shade, there were many who were prejudiced against it, alledging it was narcotic. In Burgundy we find the culture and use of Potatoes in food, interdicted, as a poisonous and mischievous root. Amongst other effects, it was accused of occasioning leprosy and dysentery. Potatoes exposed to the sun and weather a few days,

days, acquire a green colour, bitter taste, and a narcotic quality. In this state they are not fit for eating, but there is not the smallest foundation for the other allegations. Prejudice and ignorance have long yielded to experience and truth; and all mankind at this day agree, that there is no food more wholesome, more easily procured, or less expensive than the Potatoe. It constitutes the chief article of food to vast numbers of people, and may be converted to the support of all domestic animals and poultry, whether raw, boiled, or roasted.

In answer to the Queries from the Board of Agriculture.
By JAMES ANDERSON, L.L.D. &c. Feb. 23, 1795.

Query I.—"What are the best kind of Potatoes, and the best mode of culture?"

This resolves itself into two queries, which, for reasons that will soon appear evident, must be considered separately.

As to the best kinds of Potatoes, no answer can be given to this query, in the present state of knowledge, that can prove intelligible, unless it be to persons who live in the immediate vicinity of the person who answers it. In every district there are local names for particular kinds of Potatoes there cultivated, which are known nowhere else; so that to name them conveys no sort of idea whatever to a stranger: But what is worse, is, that the same name often occurs in different parts of the country denoting Potatoes of qualities extremely different from each other; so that a person trusting to names might get perhaps a dozen of different sorts, while he thought he was getting only one kind. Even under the same name, in the same neighbourhood, he may get two kinds of very different qualities, owing to an unobserved circumstance, that I shall soon have occasion to explain; so that no information whatever can be conveyed to those at a distance by means of the name only.

If that name shall be accompanied by a description, the case will not be much altered. I have seen half a dozen

dozen or more Potatoes so exactly resembling each other, that no person could have distinguished one from the other ; yet each of them was extremely different from all the others in some of its most essential qualities. This circumstance is so little attended to by those who rear Potatoes, that it seldom happens that you can buy a bushel of Potatoes without meeting with several sorts, which is for the most part the cause of that diversity of tastes, &c. that are found among Potatoes out of the same dish, in using them at the table.

It is now generally understood that the different varieties of Potatoes are all obtained from seed. To see what was the extent of the varieties that might be thus obtained, I took the seeds from a single potatoe-apple without any intermixture, and sowed them : The diversity was so great that it could scarcely be called short of infinite. The Potatoes were diversified prodigiously in regard to colour, being black, red, white, green, yellow, pink, &c. To shape long, round, knobbed and varied, in all proportions : To size, some of them being no larger the first year than peas, while others exceeded the size of the largest pullet's egg : To earliness, some of them having completed their growth, would be entirely ripe before the month of August, while others were only coming into blossom at the end of October : To prolificacy, some yielding above two hundred, while others gave only three or four : To spreading under ground, some running out to a great distance, others growing quite close to the stem ; some going deep down, while others rose to the surface : To quality, some being tough and watery, some dry and mealy ; some very pleasing to the taste, others not eatable ; and respecting stems, some carried a single stalk like a rod, others an immense profusion of stems ; some very luxuriant, others extremely dwarfish. In short, it would take a volume to describe all the varieties ; but what surprised myself most, was to find that there was no sort of connexion between any two peculiarities. Two plants which resembled each other exactly above ground, were often extremely dissimilar below ground ; while two bulbs, that resembled each other

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in all respects, were sometimes so different in quality, when tried for eating, that one was perhaps among the best and the other among the worst of the parcel.

I have been at the pains to state all these particulars to show at the same time the benefits that may be derived by a cautious selection from seedlings, and the evil consequences that may accompany a careless procedure in this respect.

It was perfectly clear from this experiment that no two stems produced from the same seeds were in all respects possessed of the very same qualities ; but it likewise happened, that when the stems were taken up, many of the bulbs had such a near resemblance to each other, that when they were mixed together they could not be distinguished by the eye, though it might perhaps happen that one of them was four times as prolific as the other, or was much better in other respects ; but as the general practice is, among those who rear Potatoes from seeds, to mix all those together which resemble each other in appearance, a mixed breed is thus obtained, that is, upon the whole less prolific and less pleasing to the palate, than some of the best ; so that the average crop is thus greatly diminished in quantity, and rendered much inferior in quality to what it otherwise might have been : And as a practice in many places prevails of picking out the smallest Potatoes for sets ; and as the original Potatoe always produces a progeny having the same habits and qualities with itself, it will thus happen that those kinds which produce the largest bulbs will soon be entirely excluded from the sets. The Potatoe being seen thus sensibly to degenerate, this change is attributed to some unaccountable effect of time on the culture of this valuable esculent ; and thus, instead of preserving one valuable kind, when it is once obtained, for a succession of ages, it is quickly lost ; and a fresh succession of fleeting varieties come in its stead, and are lost in their turn, before their real distinguishing qualities can be accurately ascertained, or they be universally disseminated through the whole nation.

Such is the real origin of that perpetual fluctuation and uncertainty in respect to the kind of Potatoes, that is observed

served to universally prevail in Britain ; and it is a matter of much more serious moment that it should be adverted to than most persons are aware of. It is an undoubted fact, that with the same care and management, at least four times the quantity of produce may be obtained by cultivating one variety of Potatoes in preference to another. Nor does it any way follow, that the largest shall be the worst of the two ; for though this may be the case, it is merely accidental, and it may be as readily the reverse. It does indeed happen that the least prolific sorts, if the deficiency be very remarkable, are thrown away by the rearer, and thus are lost. And it must happen, if no mode of selection be adopted, that those unprolific sorts must gradually decrease from the general stock ; but if they chance to be small, and if the small be reserved for sets, miserable must be the degeneration that does in this case ensue.

On the whole, the practical conclusion from these facts, is this, that no true breed of Potatoes can ever be obtained for a certainty, without admixture, but that which is the produce of a single stem, whether that be of a seedling or other plant : That it behoves those who wish to make a selection from seedlings, in the first place, to throw away all those that do not afford an ample produce, and exhibit kindly habits in other respects : That when such individuals as are desirable in these respects are once obtained, and are planted the second year, each carefully separated from all others, these should then have their eatable qualities particularly investigated, and all those should be banished, without mercy, which are not very good in this respect. By a selection of this kind continued, one good kind, when once obtained, could be kept without degenerating, as I have every reason to believe for an indefinite number of years,* or at least till another should be obtained ;

* I have never met with a single fact, well authenticated, that tended to show that any kind of Potatoe really degenerated, by a continued cultivation for a length of time, further than what can easily be referred to the cause above explained. When Potatoes were first introduced into this country, there were two kinds only known ;

ed ; which upon a fair comparison, should be found to deserve a decided preference, when it would naturally give place to the better.

Nor is it from seedlings alone that one can make improvements in this respect : Every man who has bestowed attention to the culture of Potatoes at large, must have observed that he meets with some stems in every field greatly more productive than others. And although this may sometimes happen from a circumstance no way depending on kind, as I shall soon have occasion to show ; yet, in general, there is room to suspect it may be owing to the parent breed. The very best of these individual stems, therefore ought to be picked up with care and kept, the produce of each stem by itself, till their eating qualities be ascertained : When, that one which is best, in both respects, ought to be selected for a breed, and kept by itself carefully for that purpose.

I can speak from experience here with great certainty, and can affirm, that by a careful attention to these circumstances, a farmer in a few years, will, in many cases, more than double the amount of his average crop of Potatoes, soil and culture being the same. It is easy to observe, that where the original breed of Potatoes has been unmixed, the extent of this kind of improvement must be far less considerable than where a mixture has taken place.

While this circumstance is not adverted to, it must occasion prodigious diversities in regard to the results respecting the produce of this plant : Two men, who are equally skilful, and equally careful in their culture in all respects, shall have returns extremely dissimilar ; the produce of the one may be double to that of the other. And
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known ; a round red Potatoe, and an oblong white kind that went very deep into the ground. Those continued the only kind known for many years, and gave no marks of their growing worse. Other kinds at last came into use, that were thought more prolific than them, and were preferred on that account. But now the fresh kinds are obtained from reds, all of which I have reason to think are mixed from the beginning : They degenerate apace, and they disappear almost before they are known.

as the idea of enchantment is now banished from the country, the careful farmer who compares his produce with that of another, and finds the difference by account so much against himself, is sure to attribute this difference in part, if not entirely, to exaggeration alone, or to some unaccountable defect in the season ; to which he often ascribes an unusual failure in his own crop, which originates in the cause above stated.

Not only may the amount of the crop be varied by the qualities of the kind, as above specified, but it may be also prodigiously varied by the size of the sets planted by way of seeds. This fact I ascertained by a set of experiments, conducted with great accuracy, which are recorded in the Bath society's Transactions ; the result of the experiment was that by varying the size of the seed from two ounces downwards to the smallest cuttings I planted, the produce from the same number of sets of the largest was ten times the amount in weight from that of the smallest sets. Let no one however from this fact, though duly authenticated, conclude that he might obtain a crop of ten times as much from a whole field planted with large sets, as he could obtain from it if planted judiciously with small ; for as the plants that spring from the small sets are always weaker and more dwarfish than the others, they can be planted much closer upon each other than the others, without dwarfing them very much ; there may therefore be safely grown a much greater number of stems, on the same extent of ground where small sets are employed than where large ones are preferred, so that although the produce of each of the large stems were equal to ten of the small, yet if there could be five (let us suppose) small stems reared for one of the large, in that case the real difference of produce would only be as two to one : If two stems grew instead of one, the difference would be as five to one ; though the difference in point of value would, even in this case, be much more ; for not only is it more difficult and expensive to cultivate a field properly where the stems must be placed very close together, than where they stand

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more apart ; but in all cases the bulbs produced from the small stems are much smaller than those that are afforded by the more luxuriant plants ; and it is well known that the same weight of small Potatoes will seldom bring above half the price of those that are large.

There can be no doubt that under a proper management, the same ground, with the same manures and culture in other respects, will afford a crop of at least double the amount, if sets not under two ounces be employed, in place of the smallest cuttings that some thrifty managers are so careful to employ.* This is also an unobserved circumstance that frequently influences the amount of the crop very much, and which all goes to the account of the season whereever it is observed. No wonder if men, who are neither in the habit of adverting to the one or the other of these circumstances, which where they chance both to concur to heighten or diminish a crop, may make a variation of at least four times its total amount, should differ extremely from each other in their idea of the possible product and consequent advantage that may be derived from the culture of this most valuable esculent.

Quere 11. "What is the best manure for Potatoes?"

I have not had an opportunity of trying such a diversity of manures as to enable me to give a direct answer to this quere. I shall therefore content myself with a few observations on this head, that are the result of the experience I have had.

It appears to me that manures may tend to augment the produce of potatoes two ways ; and accordingly as the one or

* We have seen an economy recommended in all the Newspapers as a great improvement, which, I doubt not, has very much diminished the crops of such incautious individuals as trusted to it. It was recommended to cut off thin slices from the surface of the Potatoes, with an eye in each, to be employed as sets, and the nucleus in the heart to be kept for food. It is scarcely possible to devise a direction that would with greater certainty insure a deficient crop, unless it be another practice that has been recommended, from the same quarter, with equal strenuousness, that of planting sprouts without any bulbs at all.

or the other is intended, the nature of the manure may be varied. The first is, where it tends to promote the general fertility of the soil, and consequently to add to the health and luxuriance of the plant. With this view, all enriching manures that operate on the soil, more by their chemical than their mechanical qualities, are evidently beneficial, but their relative degree of excellence as applied to this particular plant, I have had no opportunity to ascertain. The intention of the second class of manures, as applied to the potatoe is to render the soil in which the bulbs are formed, as light and open as possible; which is found, by universal experience greatly to augment the size of the bulb. In this case more reliance is had upon the mechanical operation of the substances employed as a dressing, than on their chemical qualities. In this point of view, I have known many substances employed with good success by poor people to augment the produce of their potatoes, that could scarcely be deemed in the usual sense of the word, manures at all; such as the twigs of young trees, cuttings (clippings) of hedges, small bushes of broom and furze, runts of cabbages laid in the trench where the potatoes were planted, and then lightly covered up with earth. The substances, so little perishable in their own nature, remain very little altered during the time that the potatoes are growing; but by rendering the earth above the bulbs light and porous (for the loose earth insinuates itself among their small twigs) it forms a bed extremely favourable for the swelling of the bulb which delights in a dry, light, crumbly mould; whereas the root of the plant, properly so called, delights to strike into a firm rich loam, tending to clay, in which it thrives with amazing luxuriance.

From these facts I am satisfied, that in order to obtain a full crop of potatoes, the skilful cultivator must adopt a practice that shall be fitted to answer both of these intentions. Every one knows that the potatoes do not adhere to the roots of the plant, but to a particular set of fibres which push out from the bottom of the stem, which

nature

nature has provided for this very purpose, and which may be very properly discriminated by the name of Umbilical Fibres. The fibres generally push out in a horizontal direction, often rising a little upward, while the roots of the plant, through which it sucks in the nourishment that sustains it, strike down into the soil below these fibres, where they branch out into various ramifications in search of food, as is common with most plants.

The soil therefore that is fitted to sustain and to afford nourishment to the plant, and the bed in which the bulbs are to be deposited, are two things totally distinct from each other, that are connected merely by juxtaposition; each requiring to be possessed of qualities different, and even opposite in some measure, to what would be required in the other: For the Potatoe-bed, light, spongy, open friability are the qualities that seem to be the most indispensably necessary; a power to absorb and retain moisture in a moderate degree, without losing its adhesiveness and ponderosity, which are the principal characteristicks of what we call a rich soil, are by no means requisite for the upper bed, but it is these qualities that constitute the very essence of the bed in which the absorbent roots are spread, and from which they are to draw the nourishment for the plant. The chief dexterity in cultivating the Potatoe consists in combining these two qualities together. Nor have I often seen it attempted in the way that is most likely to effect these purposes in the most direct and speediest manner.

There can be no doubt but a firm rich loam, tending to clay, is that which is best adapted for rearing the Potatoe-plant to its full perfection in this country, and under proper management, to resist the vicissitudes of the weather, so as to insure its health the most effectually against accidents. But a lighter soil, under the usual management, is found to afford, in most seasons, a greater produce in Potatoes, especially if the summer chances to be a little more than usually moist. When it is very dry, the case indeed is reversed. The sole defect of the heavy loam is the want of levity on its surface; and it is this superficial

perficual levity in the light loam that counterbalances its other radical defects.

Enriching manures, such as well rotted dung (lime in most cases) decayed animal substances of any sort, &c. will all tend to render both these kinds of soils more capable of encouraging the growth of the Potatoe plant ; which is the first requisite for an abundant crop of bulbs: But to dispose it to bear kindly, lightness of surface must also be given. In this point of view, the propriety of employing both the kinds of manures, especially for the weighty soil, becomes apparent. The soil should, in the first place, be rendered rich to a sufficient depth, by means of enriching manures worked into it by repeated good plowings. In this the roots will be able to strike with ease, and send abundant nourishment ; But a surface-dressing should be given of the mechanical class of manures, which would give to the surface the spongy lightness that is so much wanted. The best and readiest manure to be found of this kind that I know, is very rank new made stable dung, that consists chiefly of litter : And if it participates a little of the enriching quality from the dung, that will do no harm ; for by being washed down to the roots in summer, it will gradually promote the growth.

Quere III. "What is the average produce per acre?"

I should not have ventured to state to the Board the produce of Potatoes that may be obtained from an acre, unless I had previously explained the circumstances above mentioned ; because I am sensible the facts I shall now state, would be by many worthy cultivators deemed impossible. I have no hesitation however, in saying that I have actually reaped of good marketable Potatoes at the rate of more than thirty tons weight from a Scotch acre of ground (the Scotch is to the English acre as five to four nearly :) And I am very far from thinking that this is the utmost maximum produce that can be obtained. I choose to state the weights of produce in tons because every one who chooses it may easily reduce it to the measures best known to himself. I conceive, that most persons will find that this is considerably above the average produce

produce obtained, though some individuals will come much nearer it than others. In the present state of our knowledge respecting the kinds of Potatoes and other circumstances, I should conceive that thirty tons from an English acre might be considered as about a maximum crop. But should the attention of men be directed steadily to the raising new varieties, and always selecting the best, from what I have already seen on this branch of the subject, I should not be surprised, if in the course of some years, the above-mentioned produce, however high it may at present seem to be, would come to be considered as nearer a minimum than a maximum produce.

I may just take notice before leaving this branch of the subject, that my experiments have clearly proved the inutility of covering the stems of the best kinds of Potatoes cultivated among us. An opinion is very generally entertained, that when the stems are laid down in the earth, they send out bulbs from these stems in great abundance. I can say from experiments very carefully conducted, that I have not found this to be the case in the smallest degree; but that laying down the stems and covering them with earth, diminished the produce. I would not, however pretend to assert that this will be found to be universally the case; for I have remarked, that in wet seasons some kind of Potatoes have a tendency to send out small bulbs from the stem, which continue there of a blackish green colour. These, if laid under the earth, would no doubt become the same colour with the bulbs; but I doubt much if they would ever come to a great size; but not having tried these I cannot speak with certainty.

From the foregoing statement of facts, which are the result of a pretty extensive experience in the cultivation of this plant for many years past, aided by not a few experiments conducted with a painful degree of accuracy, it will, I hope, appear evident, that one of the circumstances which has tended the most to retard the general culture of this plant, is the difficulty of obtaining, with certainty, the best varieties. In the excursions I have made
through

through the country, I have found the effects of this want severely experienced. In some places, they cultivate soils that never can be made to produce one half of an average crop: In other places, the kinds they have are of such a bad quality, as nothing but a want of other food could induce one to eat them. The badness of the quality makes the demand much less considerable than it otherwise would be; and no fact is more certain than that the quantity grown by the farmer will always be in proportion to the demand.

The first great point wanted, is to obtain a kind of Potatoe which, when compared with others of the best kinds, shall be deemed the most palatable; for I hold it an undeniable fact, that it is the unpalatableness of many of the kinds of Potatoes now cultivated, that renders the consumption of them much smaller (perhaps not at present one fourth part) of what it would have been.

The next particular to be adverted to is, that it should be also the most productive,

And the last circumstance I should at present inquire for would be, that it ought also to be the earliest.

To find all these qualities in the highest degree united in one and the same Potatoe, will probably be a matter of great difficulty; but it is certainly not impossible: And where a number of people are induced to bend their attention with great steadiness towards one point, it is inconceivable how accurate they will become in the discrimination of facts, that otherwise might have totally escaped their notice. And where an immense number of facts, all tending towards one point are brought together, so as to admit of their being accurately compared with one another, more may be done in one year than could be done otherwise in an hundred years.

From the Memoir of Mr. SOMERVILLE, of Haddington, dated March, 9th, 1795, to the Board of Agriculture.

The following advantages result from the cultivation of Potatoes.

1st. Potatoes, from the great quantity produced upon an

an acre, when compared to the returns in grain, form a very considerable addition to the quantity of human food.

2d. They are an excellent substitute for grain in the feeding of horses and other animals. In this way they still further increase the food of man.

3d. They can be profitably employed as substitutes for flour in various branches of manufacture ; such as starch, hair powder, and the whole of the other branches of manufacture where starch is used ; which upon inquiry will be found very numerous. In this way a further addition is made to the food of man.

4th. This increase of human food has a very considerable effect in diminishing the price of labour, and thereby lessening the expence of every operation ; the effects of which, in agriculture and manufactures are extremely obvious.

5th. They can be raised, in perfection and abundance upon lands that would afford very poor returns of any other produce.

6th. Can be raised without manure ; and successive crops may be taken from the same ground with safety.

7th. Are well calculated to promote the improvement of (waste) lands.

Having enumerated the advantages arising from the cultivation of Potatoes, we now proceed to make a few remarks upon each of them. In the first place, as a much greater quantity of Potatoes can be raised upon a given space of ground than of any other produce, the quantity of food must be measured in the same proportion. Nor is this the only advantage ; as Potatoes are now found an excellent food for horses, hogs, and feeding cattle, a very great proportion of the grain that was formerly and is still used in feeding those animals may be employed in supporting an increased population.

Quere I. "What are the best kind of Potatoes, and the best mode of culture ?

To enumerate all the different kinds that are at present known, would answer no useful purpose, as many of them are not only of a bad quality, but also unfruitful. The most approved kinds are the following :

Early

Early Potatoes.

1. Dwarf Early, Round and Kidney.
2. Royal, or Cumberland Early.

Late.

1. Large White Kidney.
2. Killimanca, or Icanie.
3. Blackamore.
4. Winter Red Round.
5. Ditto Long, with a great number of eyes.

For Cattle.

1. Ox; Noble, or Cluster Potatoes.
2. Yam, or Surinam Potatoe.

The above are what experience has shewn to be the best and most profitable kinds ; but as there is some difference in the nature, and certain peculiarities in the cultivation of each, we shall take notice of them separately.

1. Dwarf Early Round Potatoes.

This Potatoe is of a small size, and is cultivated chiefly as a luxury for the table, as it ripens very early in the season. The returns, in point of bulk, are by no means equal to what is obtained from any other Potatoe ; but this deficiency in the crop is more than compensated by the high price which they bring, and the opportunity that is afforded of putting another crop upon the ground at an early period of the season. As an article of profit to the cultivator, they deserve attention ; but as furnishing a bulk or essential part of food, they weigh little in the scale. Indeed in parts of the Island, the planting of them is in a great measure laid aside since the introduction of a new kind, which the author of this paper has himself planted frequently with success, but is at a loss for a name ; that by which it is known in East Lothian, is the

2. Royal, or Cumberland Early.

This Potatoe is of a large size, very prolific, of an excellent flavour, and ripens early enough to admit of the ground being employed either in raising another crop, of the same Potatoes, or a crop of white pease, turnips or cabbages. These circumstances render it a valuable acquisition ; and there is little doubt that in a short time it

will go a great way to supplant every other kind. What gives this Potatoe a decided preference is, that it is ready at a time when the price of grain and other necessaries of life are at the highest; that is between the old and the new crop.

It cannot therefore be too earnestly recommended to every description of persons concerned in agriculture, whether farmers or proprietors, to encourage the cultivation of this kind of early Potatoe, as it affords an increase nearly equal to any of the late kinds; is ripe at that season when other articles of subsistence are high priced, and can be separated from the ground early enough to admit of its being profitably employed in raising another crop. It is found to succeed admirably upon strong clays. To say more upon these advantages would be superfluous, as they must appear sufficiently obvious to every person who is in the least acquainted with agriculture.

Late Potatoes for the Table.

1. Large White Kidney.

This Potatoe is of an oblong shape, rather thin in proportion to its length, round at the extremities, one of which is broader than the other; the color is uniformly white, and the skin smooth. It derives its name from the striking resemblance it has to a kidney. This Potatoe, in its perfect state, is very prolific, and arrives at maturity sooner than any other of the later kinds; on that account it deserves a preference; and as it seems to delight in light soils, it is, perhaps, the only kind that should be cultivated upon such lands.

2. Killimanca or Icanie.

This Potatoe seems to possess the properties of the Kidney, combined with those of the Long Red. It is generally red at one of the extremities, possesses the delicate flavor of the Kidney, but contains rather fewer watery juices, or, commonly speaking, is more mealy; and, like the Red Potatoe keeps longer, and seems rather to improve in flavor in the spring. It is very prolific.

3. Blackamore.

This Potatoe has been of late much cultivated. It grows

to a great size, is very prolific, of a fine flavor, keeps equally well with the red kinds, and can be cultivated in great perfection upon deep loams or strong clays. It is, however, longer in ripening than any of the others, which prevents the ground from being afterwards employed in raising other crops. What forms a very great singularity in the nature of this Potatoe, is, that early planting seems to have very little effect in hastening its maturity, nor is it much retarded though planted very late. The author of this memoir has repeatedly planted about the end of June, and towards the end of September or beginning of October has reaped very abundant crops.

4 and 5. Winter Red, both sorts.

These two kinds of Potatoes, though differing in appearance, seem to possess nearly the same qualities; they resemble each other in taste and flavor, ripen at the same time; both of them grow well upon strong clay and heavy loam, and both seem to be in the highest degree of perfection in the spring.

This last is no inconsiderable advantage, as they can with little trouble be kept fresh and palatable till after Midsummer, but the circumstance of their delighting in a clay soil, renders them highly valuable in situations where the soil is mostly of that kind, and where the other sorts, if planted, would both be of a watery inferior quality, and would also be very unproductive.

Potatoes for Cattle.

Cluster Potatoes and Yam.

Both of these kinds are cultivated only for feeding cattle, for which they seem well adapted; but from the harshness of their taste, they are unfit for culinary purposes. They, however, possess certain peculiarities which render them highly valuable for feeding of stock.

From the circumstance of their keeping long and being easily preserved through the winter, they will be found highly useful for feeding sheep and cattle after the Turnips are finished. By this means the interval between the turnip and grass feeding will be in a great measure filled

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filled up, and the farmer will be enabled to carry on and complete the fattening of both sheep and cattle, which he would otherwise have been obliged to dispose of for want of spring food.

We are perfectly convinced, that this last rural economy has been too little attended to; and from several successful experiments which we have seen tried, we are enabled to say, that either the cluster Potatoe or Yam can be used with singular advantage for feeding: And what adds to their value, is, that cattle who have some progress in fattening upon turnips, thrive amazingly when put upon Yams, or any of the coarse potatoes.

There is, however, a very material difference between this root and Turnips: For the greatest benefit of turnips is met with when they are given in a raw state; whereas Yams and indeed every other kind of Potatoes, produce the best effects when boiled. This operation may seem to deter many from the practice; but when it is considered that it can be done by steam, with the assistance of a very small fire, and without any trouble, it is to be hoped the objection will be done away. We do not, however, recommend constant feeding with them in a boiled state; half a feed, at least, should be given raw every day, for the purpose of keeping the belly of the animal open. We cannot therefore press the cultivation of this valuable root too strongly upon the minds of all concerned, as it will certainly lead to advantages beyond what most people imagine. We have already said, that they are well calculated either for finishing the feeding of cattle that have made some progress upon turnips, or for carrying them on during the interval between the end of the turnips and the beginning of the grass crops. They will also be found excellent for feeding work horses, and as an article of food for the young stock of horses and cattle of every description: They always eat them readily, and are found to grow and thrive better than when they are upon corn the usual way. This circumstance is not only an encouragement to breed more extensively than is at present done upon the arable farms, but

but will be a very great relief and advantage to those farmers in the hilly and upland parts of the country. Their principal dependence for winter food, at present, is upon the small quantity of coarse spots of meadow hay: A species of fodder, which nothing but the strongest necessity can bring the cattle to eat; and which, though it does keep them alive, their growth is checked, and any flesh they have acquired in summer, is lost during the winter; and when the spring arrives, they are mere skeletons.

For Milch-Cows. Every kind of Potatoes will be found an excellent winter food, as they are not only calculated to keep the cows in good heart, but tend greatly to increase the quantity of milk. This last is a matter of high importance in the vicinity of great towns, where there is a constant demand for the produce of the dairy, and where every article of that produce sells at a high price during the winter.

For the inhabitants of great towns, and to persons renting lands in their immediate neighbourhood, the introduction of this kind of feeding will be found a matter both of comfort and emolument; it will contribute to render milk and butter plenty during the winter months.

For Fowls. Boiled Potatoes are found an excellent food for fowls of almost every description, with a small mixture of bran or oat-meal. By adopting the use of them for this purpose, a considerable quantity of grain may be saved, not only in the maintenance of the present stock, but double the number may be kept, and made fit for the market, at less expence than the present small stock that is reared.

Quere II. "What is the best manure for Potatoes, the quantity necessary per acre, and its price or value?"

A succession of corn-crops without manure, will exhaust the richest soil: A succession of Potatoe-crops will do the same. There is, however, a distinction to be made in this business that is highly deserving of notice; which is, that lands which are exhausted by carrying corn-crops, will, without any manure, carry very bulky and valuable crops of Potatoes. Lands, again, that have carried several crops
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of the latter, will without any manure, carry good crops of grain. From this circumstance it appears that the same kind of food is not necessary for both; and that though the soil may be very much exhausted of the principles necessary to nourish and bring to maturity a crop of grain, it may nevertheless contain abundance of those that are necessary for rearing and perfecting a crop of Potatoes, and vice versa.

1. Stable Dung.

With regard to this, when it is used upon sandy or gravelly soils, it should be completely fermented; and if accurately laid in drills above the Potatoes, will produce a good effect. Upon clays, however, or tills, what is called long or rank dung will be much more beneficial; not that its nutritive qualities are greater when it is in that state (on the contrary, they are less) but it has one good effect in clay-soil, viz. that of keeping the ground open, and thereby allowing room for the roots to spread and swell in every direction.

This idea is so far improved upon in some situations, that broom and furze, and even wheat-straw, are put into the drills by way of manure. The use of them is certainly attended with considerable advantage; but their effect is completely misunderstood; for in place of supposing that the greatest benefit depends upon their keeping the soil free and open, which is certainly the fact, it is ridiculously imagined that they act as manure. We by no means dispute that furze or broom, when completely rotten, may be converted into manures, but we are perfectly convinced that their benefit in this case will be more completely experienced upon the crop that follows the Potatoes; as by that time they will be decayed, and mixed with the soil.

Quere III. "Whether successive crops of Potatoes can be raised on the same ground without exhausting it?"

This question has been in a great measure answered in the preceding part of this memoir. Every experience that we have had, convinces us, that a succession of any kind of crops will exhaust land, unless a considerable quantity of manure is thrown in. We have observed,

however

however, and we are completely warranted in the observation, that though a succession of crops of the same kind of Potatoes will not be profitable, yet if a different kind is planted each time upon the same soil, they will be good. We leave it to those who are conversant in such matters, to account for this difference; it is sufficient for us to state the fact; which upon trial will be found just.

ROBERT BEATSON, Esq. of Killie, in Fifeshire, respecting some experiments on Potatoes. April 3, 1795.

Some years ago I tried an experiment; after which I always planted my own Potatoes whole. I took one of the largest Potatoes I could get, and planted it whole in my garden without dung, the produce was seventy two Potatoes in all, above twenty of them were nearly as large as the mother plant, the remainder of different sizes, gradually decreasing to about the size of a walnut. Next season I planted the whole of that produce also uncut, setting the largest in the front row, the next largest in the second, and so on, diminishing the size in every row till the last, which was the smallest of all. By this experiment I found, not only that the stems of the largest seed were by far the strongest, but their produce was also by far the greatest, none of them producing Potatoes larger than their respective seed. From this it would appear that the larger the seed Potatoes, the larger will be the produce. Whether the original Potatoe would have produced an equal weight, had it been cut in three or four sets, I cannot say, but unless it would have produced a great deal more, the advantages are certainly in favour of setting them whole, by saving a great deal of labour, and occupying a less space of ground.

On Baking or Kiln-drying Potatoes, and feeding Hogs with them. By Mr. CHARLES CHALONER.

From an accurate experiment made the last year, I dare venture to recommend baked Potatoes as an excellent food for hogs. The pork produced by this food, was equal to that from barley and beans; but at present I cannot

not exactly ascertain the comparative experiment with regard to expense; however, I am of opinion that roasted Potatoes, considering the improvement of the hogs, is as cheap a food, if not cheaper, than can be given them. I roast my Potatoes upon a kiln, similar to what is used by oat-meal shellers for drying their oats. The difference in expense between boiling and roasting the Potatoes is prodigious, both with regard to the labour and fuel. A kiln that will cost £.3 will roast Potatoes sufficient for the maintenance of more than 20 hogs; and one man will bestow all the necessary attendance upon them, and do other work besides. The action of the fire, by dissipating the crude juices that are contained in raw Potatoes, reduces them into a state highly wholesome and nutritious. Boiling does this in part, but not so effectually. A Potatoe roasted in the manner above described, partakes much of the nature of a chesnut, and perhaps is not greatly inferior to it.

On extracting Spirits from Potatoes.

Several experiments have been made in Scotland for extracting Spirits from Potatoes; but no decisive evidence of the possibility of doing it has as yet been transmitted to the Board. It may be proper, however, here to insert an experiment for that purpose, mentioned in the Swedish Transactions. Sixteen measures of Potatoes were boiled with water, and worked with the liquor till the whole became a tough dough. This was diluted with boiling water to the consistence of thin gruel, and fermented. The fermentation went on well; and the liquor distilled on the third day, yielded one measure of good brandy. The Potatoes did not scuttle or burn the still, as might have been suspected.

The author, Mr. SKYLTE, makes a comparison from this experiment of the profits in cultivating Potatoes and barley for the purpose of distillation. He computes that the produce of spirit from Potatoes, is to that from barley, in equal extents of ground, as 566 to 156, even admitting the Potatoes to be planted in the worst kinds of grounds, and the barley in so good a soil as to yield an increase of fifty-fold.

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It certainly is not desirable to make so pernicious an article as spirits too cheap; but any substitute that would answer for distillation, in place of barley and other grains, is a matter of considerable importance.

From the preceding extracts and our own observations, we are led to the following conclusion :

1. That cutting the Potatoe, for seed, is but very little advantage to the crops, and if cut into small parts, is injurious.

2. That the largest and best Potatoes ought always to be preserved for seed.

3. That deep holing for planting is injurious to the crop and to the eating qualities of the Potatoe.

4. That different species of Potatoes ought never to be planted in the same hill.

5. That a much larger quantity of seed ought to be planted in a hill than is usual ; not less than thirty bushels to an acre of good land, as the produce will be much increased.

6. That Potatoes should never be exposed to the sun to dry when dug from the earth, as it wilts and gives them a bad taste, and probably an unhealthy quality.

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It certainly is not desirable to make a person who is
not a native of this country, but any foreigner who would
be a native of this country in place of native and other persons
in a matter of considerable importance.

From the preceding extracts and our own observations
we are led to the following conclusions:
1. That the native of this country for food is not very in-
telligent as to the value and if one into small pieces is
not so good as the whole.
2. That the native of this country is not always in-
telligent as to the value of food.
3. That the native of this country is not always in-
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